Structural Insights into sGC

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The membrane and soluble guanylyl cyclases (sGCs) are key families of enzymes that produce the second messenger cGMP. Although both families recognize different ligands and have therefore different N-terminal input domains, they do have similar C-terminal output domains containing a coiled-coil domain and a guanylyl cyclase catalytic domain. We present here our latest structure-function studies on both the sGC and membrane guanylyl cyclases in an effort to enhance our molecular understanding of these receptors to delineate their similarities and differences. Our studies include a new 2.15 Å crystal structure of part of sGC and mutagenesis studies of these families of guanylyl cyclases thereby providing new insights into the structure, activation, and regulation of these receptors.